MAN IN THE LIGHT OF EVOLUTION

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MAN IN THE LIGHT OF EVOLUTION

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PREFACE

THE Essex Hall Lecture was established with the object of providing an opportunity for the free utterance of the thoughts of a selected speaker on some religious theme of general interest.

The first lecture was delivered in 1893 by the late Rev. Stopford A. Brooke, on "The Development of Theology, as illustrated in English Poetry from 1780 to 1830"; and the range of topics is suggested by the following selection from the list of subjects: "The Relation of Jesus to His Age and our Own," by the Rev. Dr. J. Estlin Carpenter; "The Immortality of the Soul in the Poems of Tennyson and Browning," by the late Professor Sir Henry Jones; "Heresy, its Ancient Wrongs and Modern Rights," by the Rev. Alex. Gordon; "The Religious Philosophy of Plotinus, and some Modern Philosophies of Religion," by the Rev. Dr. Inge, Dean of St. Paul's; "Christianity Applied to the

Life of Men and of Nations," by Bishop Gore; "The Lost Radiance of the Christian Religion," by Dr. L. P. Jacks; "The Moral Basis of the League of Nations," by Viscount Cecil, and "Some Aspects of Free Thought," by the Earl of Oxford and Asquith.

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MAN IN THE LIGHT OF EVOLUTION

More than sixty years have passed since the publication of Darwin's "Descent of Man"; and the subsequent remarkable increase in our knowledge has strengthened his general conclusion that Man is solidary with the rest of creation, and that he emerged from a stock common to him and the divergent Anthropoid Apes.

Everyone is familiar with Shakespeare's matchless appreciation of Man: "What a piece of work is a man! how noble in reason! how infinite in faculty! in form and moving how express and admirable! in action how like an angel! in apprehension how like a god!"

How can this Man be thought of as sprung from an apish stock?

Yet the Darwinian argument is irresistible. How many grades of intelligence, good feeling, and control there are amongst the

members of the *Homo sapiens* species spread over all the earth, and how impossible it is to make any impassable gulf between this modern man type and the slouching men of Neanderthal, believed to form a collateral species that dwindled away without leaving descendants.

Modern man can weigh the heavens in a balance and knock a fragment out of an atom; he can annihilate distance and see the invisible; he plays upon the long gamut of electro-magnetic waves, using the longest for broadcasting and the shortest for healing his sick; he wrings bread out of the thin air; among plants and animals he begins to control the generations yet unborn; how dare we talk of his arboreal apprenticeship? Yet by what rigorous continuity is he affiliated to primitive men, of whom Æschylus drew such a vivid picture: how, "first, beholding they beheld in vain, and, hearing, heard not, but, like shapes in dreams, mixed all things wildly down the tedious time, nor knew to build a house against the sun with wicketed sides, nor any

wood-work knew, but lived like silly ants, beneath the ground, in hollow caves unsunned. There came to them no steadfast sign of winter, nor of spring flower-perfumed, nor of summer full of fruit, but blindly and lawlessly they did all things."

Such was the rock whence we were hewn and the pit whence we were digged. But the roots of the genealogical tree go much deeper, from Homines to Hominoids or men in the making, and from these tentative men to a stock common to them and the Anthropoid Apes. The great divergence that separated Anthropoids from Hominoids probably occurred between one million and two million years ago.

(i) *Evidence of Man's Pedigree*

What strict evidence is there of man's organic relationship with the highest apes? They are his collaterals on another branch of the genealogical tree, for no one supposes that any living ape is ancestral to man. But we have none the less to think a good

deal about the living apes, for we need them to illumine our fragmentary knowledge of the extinct stock common to them and to man. In this connection, it must be noticed that various discoveries of fossil Primates, such as that in 1911 in the Sivalik Hills, have done something to lessen what Darwin called "the great break in the organic chain between Man and his nearest allies."

What of the evidence? There is the all-pervading similitude of structure between man and the highest apes, bone for bone, muscle for muscle, brain-wrinkle for brain-wrinkle. In spite of ourselves we are walking museums of anatomical relics, some of which link us back to the Simian, and others to antecedent forms much more remote. The dwindling tag that we call the third eyelid or the rarely activated muscles of our ear-trumpet are familiar illustrations of our numerous vestiges, eloquent of the past.

There is a striking resemblance between the bodily life of man and that of the ape; and they sometimes approach one another

in their misery, when they are victims of the same disease, such as tubercle and rheumatism. Human blood may be transfused harmoniously into a chimpanzee, though not into a monkey. There is literal evidence of blood-relationship and of its degree of closeness. In his individual development man climbs up his own genealogical tree, and both embryos and infants have their anthropoid features. Ontogeny recapitulates phylogeny, though it is always specific from the very first. Arrests of development sometimes betray the Simian affinity, and reversion often drags evolution in the mud. Man, as the poet said, appears stuccoed all over with quadrupeds.

Man's apartness when at his best is undeniable, but we must still use the words that conclude Darwin's "Descent of Man": "We must, however, acknowledge, as it seems to me, that man, with all his noble qualities, with sympathy which feels for the most debased, with benevolence which extends not only to other men, but to the humblest living creature, with his God-like

intellect, which has penetrated into the movements and constitution of the solar system—with all these exalted powers, man still bears in his bodily frame the indelible stamp of his lowly origin."

(ii) *Corroborations since Darwin's Day*

In the sixty odd years since the publication of Darwin's great book, three distinct steps of progress have been made in regard to our knowledge of the ancestry of man. In the first place *more gradations are known*, linking him back to an unknown ancestry common to Hominoids and Anthropoids. No doubt there has been some impetuosity in dealing with pre-human remains, often very fragmentary; and no one can have much pride in an ancestor like the American Hesperopithecus, a shadowy being reconstructed on the basis of two teeth found in Nebraska. But it is impossible to suppose that the experts have been altogether wrong in concluding that the cleavage between *Homo sapiens* and the Anthropoids has been,

so to speak, bridged by the discovery of more primitive human species—the Neanderthal man, the Rhodesian man, the man of Taungs, and the Heidelberg man; and that the gulf between *Homo* and the Anthropoids has been, so to speak, spanned by the discovery of the Piltdown tentative man and the Ape-man of Java, known as Pithecanthropus the Erect.

In the second place, the story of man's ascent is now told in a somewhat subtler way. No one believes, for instance, that any of the large apes—Gorilla, Chimpanzee, Orang, or Gibbon—is on the direct line of man's ancestry. They went one way, mostly remaining arboreal, and he went another.

Very few of the experts seem inclined to regard even Neanderthal man as ancestral to *Homo sapiens*. He was a short, slouching, shuffling, big-headed, silent huntsman who pursued small game with flint-headed weapons, who used fire, and buried his dead with reverence, who lived on towards the end of the last Glacial Epoch. But he was no ancestor of ours.

It is important to get rid of the idea of linear succession, like the steps on a great flight of stairs. What the evolutionary facts disclose in this and other cases is a branching staircase. There is a solemnity in the patience of the age-long man-ward adventure which has crowned the evolutionary process upon the earth. Two or three millions of years ago the Primate stem sent out its first tentative branches, and the result was a tangle of monkeys. First the New World monkeys diverged, and then those of the Old World; the main stem grew on. It next gave off the lower Anthropoid Apes, and then the higher, but the main stem, vaguely known, probed on. Without haste, without rest, and sometimes leading to nothing, more branches were given off—tentative men eventually: Pithecanthropus the Erect in Java and Eoanthropus from the Sussex Weald. At last came *Homo*, but even among his species there was the same sifting, for several, like the Neanderthal men, who shared in the struggle, failed to enter into the promises. When we envisage the

sifting-out process, we feel the unutterable vulgarity of saying that "man sprang from a monkey."

A third step of progress since Darwin's day is that we have more light on the factors in the evolution of man's ancestors. Thus there can be little doubt that an arboreal apprenticeship on the part of man's ancestors counted for much. It led to the emancipation of the hand, a new pose of body, a recession of the snout, a correlated increase in the cranial cavity, a shunting forward of the eyes and an increase of stereoscopic vision, a greater mobility of the head, a greater emphasis on touch, a decrease in the olfactory region of the brain, and an increase in the region concerned with tidings from hand and eye and ear, with manipulative skill, and with attention. Very illuminating has been Professor Elliot Smith's demonstration of the inclined plane of brains, leading from primitive types like the tree-shrews and Tarsiers, onwards through Marmosets and Monkeys, to Anthropoids and Man—a progressive evolution along a definite line.

Man may have come to his own by a brusque advance or mutation, or by several, but it was along a definite line of cerebral differentiation now clearly known.

It is also probable that there is good sense in Professor R. S. Lull's correlation of man's emergence with the shrinkage of forests, owing to aridity in the Miocene or early Pliocene. This led the Hominoids to come to earth. It may also be allowed that social predispositions, prolonged ante-natal life, prolonged infancy and playful childhood, would act as sieves favouring the survival of variations in the direction of man's higher qualities.

(iii) *Reaction from the Darwinian Account of the Descent of Man*

There have been many recoils from the scientific conclusion that man evolved from an ancestral stock common to him and to the Anthropoid Apes. But most of the recoils are based on misunderstanding. There has been *æsthetic* recoil. How could

man, set, as the Psalmist says, "but little lower than godhead," be a scion of a Simian race? Yet the same gratuitous difficulty might be felt when we think of man's embryonic stages in the days of his "imperfect substance." There has been the *ethical* recoil, as if dignity was not heightened by a lowly origin, and value increased by the genetic journey-work of ages. The recoil has sometimes been due to ignorance of the fact that no living ape is ever thought of as man's ancestor, nor even as his distant cousin if the split occurred over a million years ago. But brushing aside these and other misunderstandings, we must give due consideration to the position of an evolutionist so convinced and expert as Alfred Russel Wallace.

Darwin's magnanimous colleague was firmly convinced that man sprang from a stock common to him and to the Anthropoid Apes. Yet he was equally convinced that there was something unique in man—something "of a spiritual essence or nature"—which had not its primordium or rudiment

in the beast, and had not evolved by processes similar to those which operated in man's general ascent as an organism. Wallace felt, with Sir Thomas Browne, that "there is surely a piece of divinity in us; something that was before the elements, and owes no homage unto the sun." He sought to show that the mathematical, musical, artistic, and moral faculties of man could not be accounted for by the Natural Selection of variations that crop up, but demand "some origin wholly distinct from that which has served to account for the animal characteristics—whether bodily or mental—of man." He believed that this origin was to be found in a "spiritual influx," such as operated also at the origin of living creatures and of consciousness.

But there are many reasons why Wallace's position cannot be held. Years have passed, and some sketchy account *can* now be given of the evolution of artistic, musical, and moral faculties. Although we cannot at present account for brusque mutations, we know that they occur, and we do not feel

compelled to postulate a special spiritual influence to account for a " calculating boy." Although it may not be possible to account for a faculty like musical talent in terms of ordinary Natural Selection, it is impossible to ignore the fact that response to music has often been of survival-value both in war and in peace. Nor is it difficult to find the rudiments of music in the animal world. Wallace did not allow enough for the possibility that a quality like mathematical talent, which is not of itself of direct survival-value in the every-day struggle for existence, may be correlated with a more generalised quality like clear-headedness and visualising power, which certainly favours survival. It seems hazardous to try to maintain that man has any quality that can be called unprecedented, that is to say, with no adumbration whatsoever in the lower creation. To try to picture man as, for instance, a *moral* Melchisedek " without descent," is both futile and unwholesome.

But there are two more general objections to Wallace's position. The first is that it is

tainted with the error of using transcendental concepts to eke out scientific descriptions. We understand an evolutionist who says: The trend of all the cumulative evidence convinces me of the *fact* of man's evolution; on the other hand, to describe the factors in the process is baffling. But to argue from the imperfection of scientific analysis to the necessity for the operation of a spiritual influx is illegitimate. Science formulates or describes in terms of Lowest Common Denominators; Religion interprets in terms of the Greatest Common Measure. Both are within their rights; but each must keep to its own task.

Alfred Russel Wallace was a religiously-minded evolutionist, strongly convinced of the reality of a spiritual world behind the world of the measurable and the ponderable with which science deals, and he always insisted that no discontinuity was implied in the operation of the spiritual influxes which he postulated. Our protest is not against this metaphysical or religious belief; it is against a premature abandonment of the

possibility of naturalistic description,—a kind of description which we hold to be quite consistent with religious interpretation. Moreover, speaking for ourselves, we must confess that there is something unwelcome in the suggestion that a spiritual influx intervened now and again to help natural evolution over difficult stiles. This view suggests a certain imperfection in Creation, as if the world-process required special attention at critical junctures.

When all is said, however, there was good sense in Wallace's reaction; he realised more vividly than many *the apartness of man*. He saw man as a new synthesis, not indeed coming brusquely to his own, but with growing possibilities that made him in a deep sense a new creation. This is the truth that has recently received brilliant exposition in Professor Lloyd Morgan's Gifford Lectures on "Emergent Evolution." In the domain of things it often happens that something unexpected emerges. A combination of two gases, oxygen and hydrogen, results in the production of water with entirely novel and

in some measure unpredictable properties; and similarly, when the modern chemist, a little creator in his way, turns out a startlingly novel carbon compound. So there has been in organic evolution a repeated origin of new types, now an insect and again a bird, resultants that seem too big for their components.

Using the word "emergence" does not explain anything, but it is useful in emphasising the difference between an additive resultant and an outcome that is a new synthesis. Professor Lloyd Morgan illustrates his point by an apt quotation from Browning's *Abt Vogler:*

> "And I know not if, save in this, such gift be allowed to man
> That out of three sounds he frame, not a fourth sound, but a star."

"By 'star' Browning lays poetic stress on the emergent character of 'chordiness,' which is something more than the additive resultant of the constituent tones—something genuinely new."

It seems to us that the truth which Alfred

Russel Wallace was emphasising in a way of his own was the truth of man's "emergence." Man was a new pattern, an organic genius, a new synthesis, if ever there was one; no mechanical additive resultant, but a vital new creation; not involving any breach of continuity, but making a fresh disclosure of the unending riches of reality. Into the new fabric of humanity came many strands of many mammals, but some threads were new and the pattern was new.

(iv) *Man in the Light of Evolution*

Plato spoke of man as the "microcosm," as if in him the multitudinousness of the world found epitome. How true this is, every evolutionist knows. The Amœba is a primitive one-celled animal, but the white corpuscles of man's blood are amœboid, and so are the tips of the nerve-fibres that feel their way out from his embryonic brain. Relatively simple ribbon worms on the seashore are the first creatures to show the red-blood pigment to which we owe the vigour

of our life. The Eustachian tube that makes communication between our ear-passage and the back of our mouth is a rehabilitation of the gill-cleft of a fish, and the beautiful three-linked chain of ossicles that conveys vibrations from the drum of the ear to the inner ear has its origin in the commonplace framework of a fish's jaw. The Amphibians were the first animals to have fingers; their acquisition thrills to fine issues in the hands of the painter and the pianist. The salts of our blood and their relative proportions are much the same as those in the ancient Cambrian sea. In the light of evolution man is seen as the unification of hundreds of pre-human strands of being. One must forgive a little rhapsody to the enthusiast who writes: "All lower things are mute predictions of man. The sap of the tree foretells his blood, and the hoof of the quadruped prefigures his hand. Nothing was ever moulded into form that was not a prophecy of something to be afterwards unfolded in man. In him unite zoophyte and fish, monad and mammal, and he confesses this

in bone and function. The mouse is his fellow-creature. The worms are his poor relations." One recalls the lines in Emerson's "May-Day"

> "And, striving to be man, the worm
> Mounts through all the spires of form."

In the light of evolution some of man's inconsistencies become more intelligible. "The web of our life," Shakespeare said, "is of mingled yarn, good and ill together." There are coarse strands as well as fine, and the animal past has its lien on the human present. Most men have some trouble in letting the ape and tiger die. Original sin is the tax on our entailment of original righteousness. "Slowly," as the rhapsodist says, "slowly does the body forget its heredity. We have worked the tiger out of our teeth and nails, but he lingers in our passions." The hand of the past is not dead, but living, and it is not always blessing us.

It is not for Science to speak of "purpose" and "preparation"; yet can one ignore the fact that man has "two worlds to attend

him"? The fishes may not be in the sea to support the fisherman, nor the welter of water-fleas to feed the fishes; yet that is what happens. It is not a case of great rivers providentially flowing past large towns, it is a case of broadly laid foundations on which secure superstructures are built. Nature cannot be called altogether friendly; man has to fight his way to mastery; yet all things work together so well that we cannot philosophically regard man's emergence as an *episode*.

In a deep sense it is true that man is the crown of Nature. In him the leaf becomes the flower. Some people never get past talking of man as if he were no more than a bipedal mammal with an unusually big brain and a strong herd-instinct. Yet he is so much more—even the crown of creation. There are great trends in evolution that find their fulfilment in man. In Animate Nature there is a premium on clear-headedness, on facing the facts, on knowing the environment—this culminates in man's search for truth. In Animate Nature there is a

premium on healthfulness and beauty—and this is ever striving to find its crown in man. In Animate Nature there is a premium on good parents, good lovers, good kin, the self-forgetful and the self-subordinating, as well as on independent self-sufficiency. But these are qualities—springs of conduct—that form the impulse of morality. Man's ideal of progress, as the fuller embodiment of the true, the beautiful, and the good, is congruent with great integrative trends in Organic Evolution. There is an organic momentum that is with us—literally working in us—at our best. This is the Gospel of Evolution. It is an Ascent, not a Descent, that lies behind us.

(v) *Influence of Evolutionism on Man's Estimate of Himself*

If all men were philosophers, Darwinism would make no difference to man's self-respect. But it is hardly surprising that this should suffer in many cases, when evolutionism is accepted hastily and in a crude form.

If the earth arose as a knot on the arm of a spiral nebula; if living organisms emerged upon the earth as the result of synthetic processes amongst inorganic material; if all the galaxy of living creatures is derivable from relatively simple ancestors somewhat in the same way as all the domesticated pigeons are known to have come from the wild Rock Dove, and all the cabbages from the wild Kale by the sea-shore;. if Mind emerged naturally and necessarily when the nervous system attained to a certain degree of complexity, as indeed we see recapitulated in every human infant; if man is a Mutation springing from a generalised, vaguely known, Primate stock common to the Anthropoid Apes and the early tentative men; and if all this has happened in a continuous natural autonomous fashion, like the voyage of a self-steering vessel; it is not surprising that many find it difficult not to think of man as impoverished in dignity and diminished in uniqueness.

Perhaps it is unfamiliarity with biological facts that is in part to blame. The zoologist

is so familiar with the conclusion that birds evolved from an extinct reptilian stock, that he thinks more of them, not less, because of their humble origin. Origin does not affect value. Who thinks less of Newton because he was once a peculiarly miserable infant, or of Shakespeare because he was once an embryo? What reproach to the modern lack of imagination is the Psalmist's magnificent religious idealisation of the mystery of embryonic development :—

" The stirrings of my heart were of Thee;
Thou didst knit me together in my mother's womb.
I will give thanks unto Thee in my fear and wonder :

Marvellous are Thy works, and that my soul knoweth right well.

My frame was not hid from Thee,
When I was made secretly and richly wrought in the deep of the earth.

Thine eyes did see my substance yet being imperfect :
And in Thy book they were all written,
The days that were outshapen for me,
When as yet there was none of them.

How dear are Thy thoughts unto me, O God;
O how great is the sum of them!
Should I tell them, they are more in number than
the sand.
My spirit awaketh, and still I am with Thee."

What is the psychological reason for the conspicuous unpopularity of the scientific view of man's origin, especially among those who always think of him nobly? Why is it that many intellectual combatants are evolutionists for the animal world, but creationists for their own species? Why is it that so many cling to the idea of man as the Great Exception?

Allow something for the fact that the Evolution Idea is relatively new to the ordinary citizen of the world, for "The Descent of Man" was published only some sixty years ago; allow something for unfamiliarity with biological ideas; allow something for our almost reflex recoil from upsetting ideas; allow something for common-sense reaction from crude presentations, as of the gorilla as man's cousin; but this cannot be all.

A deeper motive for the recoil from the evolutionist account of man's origin is the

feeling that it involves a serious loss of dignity. Man who was made a little lower than the angels becomes solidary with mammals. This feeling must be corrected by a keener appreciation of the facts. First we must think of the long succession of achievements in Organic Evolution. Defeats, retrogressions, degenerations, blind alleys, there have been; but on the whole evolution is integrative and progressive. As age succeeded age, there was an emergence of nobler and finer forms of life—an increase of feeling, perception, and control—in short, a growing emancipation of "Mind." There is a long groaning and travailing of creation, and at length man is born. The solemn slowness of the "onward advancing melody," as Lotze called it, is very impressive—hundreds of millions of years before man could begin to be. What origin could be more dignified than the long Ascent that led to Man!

How can one correct this impression that Darwinism belittles us? The problems of human nature are too difficult to be sum-

marily treated; but we have reason to distrust our tendency to false simplicity. A materialism is an attempt to ignore the uniqueness of life by forcing vital phenomena in their entirety into the framework of chemistry and physics. A biologism is an attempt to ignore the uniqueness of man by forcing his activities in their entirety into the framework of mammalian physiology. Thus it is an insidious biologism to underestimate the power of "nurture" in determining the expression of hereditary "nature," and it is another biologism to forget the importance of the external heritage in which man can register racial gains without any help from the germ-plasm. Similarly, while the influence of the ductless glands is indubitable and far-reaching, it is a biologism to picture an average man as the slave of his hormones. There is nothing in Biology or Evolution-lore to warrant us thinking less nobly of man, but the tendency to oversimplify is strong. It is so easy to lose the soul in the mind, the mind in the body, the man in the mammal, and life in the dust.

But there is another way of combating and correcting the feeling that Darwinism has belittled man. We must think not merely of what man was, but of what he is and might be. We should judge everything by its best, and then what a piece of work is a man! He harnesses the forces of Nature and makes them drive his many chariots; he controls life and staves off death; he creates the incomparably beautiful in his art and makes the world translucent in his science; he sends his ethical tendrils to the stars. But it is especially in the light of evolution that we feel sure of man's promise of future achievements worthy of the past. Far from depreciating, Evolutionism aggrandises man.

(vi) *Evolution in the Light of Man*

We have been thinking of man in the light of Evolution, but it is also profitable to think of Evolution in the light of man. It is often said that Science has nothing to do with significance or meaning; its work is description. But while this is in the main

true, we must not allow our methodology to become tyrannical. In embryology, for instance, we cannot make sense of the sequence of stages unless we see them not only in the light of the garnered past, but in the light of the fully-formed organism that is to be. Similarly, but rather philosophically than scientifically, we must envisage Evolution in the light of man. For he is the finest product of the long process, the result that seems most worth while (to use very anthropomorphic words), the outcome that unifies the long and circuitous journey. The interpreter of Nature is in a sense its interpretation. Evolution is essentially integrative and man-ward. In the light of man at his best—with a personality growing in understanding, good-will, and control—we get some glimpse of the world's meaning. A noble human life justifies itself—is a satisfaction in itself—to a degree that could not be said of the finest animal masterpiece, nor even of Neanderthal man. And the clue becomes clearer when we recognise that it leads us to finer and finer prospects.

(vii) *Man still Evolving*

The static creationist view is so deeply rooted in us that even naturalists sometimes seem to forget that evolution is going on. No doubt there are conservative types, like the Lamp-Shell (*Lingula*) or the King-Crab (*Limulus*), types that found a position of organic equilibrium millions of years ago, and have hardly changed since. But these are exceptional. Whenever we settle down to the minutiose study of a group of plants or animals, we find ourselves face to face with two facts. On the one hand there is a discontinuity and persistence of well-defined individualities or species; on the other hand, there is an astounding flux. Whether we study Evening Primroses or Snapdragons, Rats or Land-Snails, Moths or Alcyonarian Corals, we find a restless outcrop of new tentatives, a surge of variability.

That man also is evolving is evident in the number of races within the one species (*Homo sapiens*); and the flux is evident in the difficulty of defining human races—at

least after we get below the large divisions: Negro, Mongol, Mediterranean, Nordic, Alpine, and Australian. Man is not only very modifiable, as our occupational types show; he continues to be intrinsically very variable.

One of the most damnable heresies (a term applied in 1858 to the Evolution Theory) is the denial of the importance of new departures. With the speaker in Ecclesiastes we are to apt to say: "What has been, shall be; what has happened already, will happen again; there is not a novelty under the sun. When anything occurs that one is disposed to call really new, it will be found to have happened already—ages before us." But this is not what the facts suggest if we take a long view. The genuinely new is continually emerging, and man is one of its fountains.

It is true that anatomists do not look for startling changes in man's bodily structure. Variations are always cropping up, but many of them at least seem to be tentatives that are quickly withdrawn. It is likely, however, that changes in the way of simplification are persistent—that man is losing his

wisdom tooth and his little toe; that some relics are disappearing from his body-museum; that his inconveniently long food-canal may be shortening. Of course it cannot be supposed that all losses are to the good (thus civilised man seems to have a weakened sense of smell); or that all variations are progressive (for that could not be said of short sight or of nervous instability); but variations that are congruent with stability have most chance to persist. It is not unlikely that deep constitutional changes are in progress, changes in the shape of life's trajectory, perhaps correlated with changes in the ductless glands. Thus there is some evidence that the youthful period in civilised man is being lengthened out. But the most promising outlook as regards variability is in man's brain, for there are fallow areas for which no use is known, and it is probable that new linkages and orchestrations among the nine thousand millions of brain cells are even now in progress. It is often said that man's intellect has not improved since the time of Aristotle,

but on the evolution-clock that is a very short time ago compared with man's great antiquity. Even if there be no better brains now than then, it is progress if good brains are becoming commoner. It is certain that man is varying, plus and minus, along the line which most distinctively led him to what he is, namely, the line of cerebral evolution.

There seems no biological reason for supposing that there is any *necessary* decline in a species when it attains to a considerable height of perfection, though there are admittedly dangers of over-specialisation and of stereotyping which increase as a species grows older and more stable.

If we use the word Personality to mean the Integrated Self—all of the Self that is sufficiently controlled and harmonised to act as a unity—then it may be said that there is no thinkable end to the evolution of Human Personality. This is the greatest greatness of Man, that he is so asymptotic—always approaching yet never attaining to a knowledge of the truth, to take only this one side of his being. Where this evolution

of the Personality may lead man, who dare say? But one of the lessons of Evolution is that Science should be slow to try to close doors, especially those which other forms of experience incline many to keep open. After all, we should remember that Science, magistral as it is, is but the outcome of fishing with one kind of meshed net in the ocean of reality.

There was not in the Nebula much promise of our fair Earth teeming with beautiful forms of life, and yet the new Vital Synthesis was in course of ages realised. There is not in the Amœba much promise of the conscious inner life of many a bird and beast; and yet the Integration of Mind was in course of ages realised. We may think of the mind as a musician playing on the instrument of the body, or we may think of Body-mind and Mind-body as two aspects of the Organism, as indissoluble as Matter and Energy, or as the convex and concave side of a dome; but whatever be our metaphysical theory, we cannot get away from the fact that in everyday life mind counts,

and that in the course of evolution it has counted increasingly. It must also be allowed that while the monistic biologist cannot get himself to think of disembodied mind, there is evident in the evolution of animals an increasing emancipation of mind from the grosser trammels of the body. "Mind" may not be able to free itself from the nervous system, but it can in many cases transcend both lung and liver. Evolution is a story of the increasing freedom of mind.

Recent studies on chimpanzees and on the other higher apes have greatly heightened our estimate of their intellectual powers. Their intelligence along certain lines is startling, and they make eerie approaches to self-consciousness and rationality. Yet what imaginary inquirer—an omniscient naturalist, like Laplace's omniscient chemist—would have predicted from the perceptual inferences of the apes the conceptual achievements of human genius? Man was a new synthesis of mind; his emergence made the world new. May we not venture to think of the possibility, at least, that there is even

now evolving in man another synthesis, a new integration, a reasonable soul—transcending the everyday mentality of man, as much as life transcended the dust, and mind transcended protoplasm, and man transcended the ape? And as each new synthesis in the past has meant more mastery and freedom—of a kind that could not have been predicted—so it may be with another new synthesis, a transcendent soul. More than hints of this may be found in history, in religious experience, and in the adventures of super-men.

But we must not close with any peradventure. Among the most distinctive features of man everyone would rank his capacity for rational discourse, his ethical ideals, and his consciousness of his own history. Not less distinctive is his power of registering gains outside himself in a social heritage as contrasted with a natural inheritance. In literature and art, in science and its realised results, in institutions and laws, and in the framework of society itself, man has built up this external heritage, which

means almost as much for him as does his germ-plasm. Here is an unending vista of possible evolution. Education is in part the discipline of learning to make the most of our external heritage, whose possibilities of ameliorative influence are not soon to be exhausted. On this perhaps most distinctive line of human evolution, there is not merely the problem of getting more out of the external heritage, there is the problem of putting more into it, of enriching it cumulatively to "the glory of the Creator and the relief of man's estate."

NOTE

The following books by the same Author deal with kindred subjects:—*The System of Animate Nature* (2 vols.), Gifford Lectures, St. Andrews University, Williams and Norgate, London, 1920; *The Control of Life*, Melrose, London, 1921; *What is Man?*, Methuen, London, and Putnams, New York, 1924; *Science and Religion*, Methuen, London, and Scribners, New York, 1925; *The Gospel of Evolution*, Newnes, London, 1925.

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